UNITED STATES PATENT AND TRADEMARK OFFICE

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ART UNIT	PAPER NUMBER
2115	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>07 February 2002</u>.

2a)☐ This action is **FINAL**.　　　2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
　　closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-25</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-25</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
　　　　　application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)　,

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date <u>02072002</u>.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

1.   This action is in response to the application filed on February 7, 2002. Claims 1-

25 are pending.

2.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

3.   Claims 5-6, 8-9, 11 and 13-20 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention.

 Regarding claim 5-6, 8-9, 11 and 13-18, these claims are vague and indefinite as

to the relationships between the desired operating temperature, the temperature

reading, the positive and negative difference values, the frequency value and the

voltage value recited in these claims. These claims recite positive and negative

difference values without specifying the comparison steps used to obtain these

values. Therefore, these claims are unclear as to what values the recited positive

and negative difference values represent.

 Regarding claim 11, the phrase "the temperature voltage" lacks proper

antecedent basis.

 Claims 19 and 20 are rejected because they incorporate the deficiencies of

claims 15 and 16.

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 1-4, 7, 10 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kikinis, U. S. Patent 5,502,838.

Per claim 1:

A)   Kikinis teaches the following claimed items:

1.   taking a temperature reading in connection with the computer with Measure T 105 of figure 6 and at column 5, line 64 – column 6, line 1;

2.   determining a desired operating temperature with Set T_{TH} 103 of figure 6, at column 4, lines 33-39 and at column 5, lines 64-66;

3.   comparing the temperature reading and the desired operating temperature to determine a temperature difference with element 109 of figure 6, at column 4, lines 40-53 and at column 6, lines 1-13;

4.   determining a user activity indication based on the temperature difference is inherently performed when comparing the temperature reading to the threshold temperatures as described at column 4, lines 40-53 because the temperature reading of the processor is directly related to processor activity which indicates a user activity level.

Per claims 10 and 12:

A)   Kikinis teaches the following claimed items:

1.   taking a temperature reading in connection with the computer with

Measure T 105 of figure 6 and at column 5, line 64 – column 6, line 1;

2.   determining a desired operating temperature with Set T_{TH} 103 of figure 6,

at column 4, lines 33-39 and at column 5, lines 64-66;

3.   comparing the temperature reading and the desired operating temperature

to determine a temperature difference with element 109 of figure 6, at column 4,

lines 40-53 and at column 6, lines 1-13;

4.   adjusting the voltage and frequency applied to a processor based on the

temperature difference at column 2, lines 25-33, at column 5, lines 59-63 and at

column 6, lines 10-13.

Per claims 2-4 and 7:

Kikinis describes comparing the temperature reading to threshold temperatures

as described at column 4, lines 40-53. The temperature reading of the processor

is directly related to processor activity because the more active a processor is,

the more power the processor consumes and the temperature output of the

processor is directly related to the power consumed by the processor. Therefore,

a temperature reading that has risen to exceed the desired (threshold)

temperature clearly indicates increased user activity and a temperature reading

that has dropped below the desired temperature clearly indicates decreased user

activity. Kikinis describes adjusting a clock signal as a function of the

temperature difference at column 2, lines 25-33 and at column 5, lines 59-63.

Kikinis describes adjusting a voltage applied to the processor at column 6, lines

10-13.

7.   Claims 5-6, 8-9, 11, 13-18 and 21-22 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Kikinis, U. S. Patent 5,502,838.

Per claims 5-6, 8-9, 11 and 13-18:

Kikinis describes the steps recited in claims 1, 4, 7, 10 and 12 as described

above. Kikinis does not explicitly describe changing the voltage and frequency

based on the recited positive and negative difference values. Kikinis describes

changing the voltage and frequency based on the difference value $T - T_{TH}$ as

described above. Kikinis describes decreasing the frequency and voltage based

on a positive difference and increasing the frequency and voltage based on a

negative difference. However, it would have been obvious to one having ordinary

skill in the art at the time the invention was made that the voltage and frequency

adjustments could have just as well been based on difference values obtained

using $T_{TH} - T$. Therefore, the recited positive and negative difference values are

merely values based on the same T and T_{TH} taught by Kikinis but change the

order of the values in the difference computation. Such a change puts form over

substance, lacks an inventive step and would have clearly been obvious to

anyone of ordinary skill in the art. Regarding claim 14, this claim is similar is

scope and content as claims 5, 8 and 13 in that increasing the frequency and

voltage increases a performance state of the processor. Therefore, claim 14 is

rejected for the same reasons as claims 5, 8 and 13. Regarding claim 15, this

claim is similar is scope and content as claim 5 and is rejected for the same

reasons as claim 5. Regarding claim 16, this claim is similar is scope and content

as claim 8 and is rejected for the same reasons as claim 8. Regarding claim 17,

this claim is similar is scope and content as claim 6 and is rejected for the same

reasons as claim 6. Regarding claim 18, this claim is similar is scope and content

as claim 9 and is rejected for the same reasons as claim 9.

Per claim 21:

A)   Kikinis teaches the following claimed items:

1.   a processor device having a clock input to receive a clock signal with

figures 1 through 3;

2.   a temperature measurement device taking a temperature reading in

connection with the computer with figure 3, with Measure T 105 of figure 6 and at

column 5, line 64 – column 6, line 1;

3.   control logic responsive to the temperature measurement device

comparing the temperature reading and the desired operating temperature to

determine a temperature difference, with Clock Control Logic 41 of figure 3, with

element 109 of figure 6, at column 4, lines 40-53 and at column 6, lines 1-13;

4.   adjusting the frequency applied to a processor based on the temperature

difference at column 2, lines 25-33 and at column 5, lines 59-63.

B)   The claims seem to differ from Kikinis in that Kikinis fails to explicitly teach allowing a user to select between a manual clock speed mode and an automatic clock speed mode as claimed.

C)   However, Kikinis describes allowing the user to set the threshold temperature (desired operating temperature) by programming this value into the computer at column 5, lines 64-66. Therefore, if a user wants to disable the automatic clock speed mode, the user can set the threshold temperature to the maximum operating frequency of the processor. Furthermore, it is well known in the power control and timing arts to allow a user to disable automatic systems or to set automatic system parameters so that the automatic system features do not operate under normal operating conditions so that they will not interfere with tasks such as downloading, copying, audio and video tasks. It would have been obvious to one having ordinary skill in the art at the time the invention was made to allowing a user to select between a manual clock speed mode and an automatic clock speed mode, as suggested by Kikinis, in order to increase the flexibility of the system and allow the user to disable the automatic features if they interfere with the performance of tasks such as downloading, copying, audio and video tasks.

Per claim 22:

Kikinis does not explicitly describe taking an average of a plurality of temperature measures as claimed. However, it would have been obvious for one of ordinary skill in the art to take an average of a plurality of temperature measures in order

to base the temperature difference comparison on the average temperature

difference. This would allow for a smoother series of adjustments in the

processor clock frequency and avoid sudden spikes in the temperature

measurements and frequency adjustments.

8.   Claims 19-20 and 23-25 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kikinis, U. S. Patent 5,502,838 in view of Atkinson, U.S. Patent

6,336,080.

Per claims 19-20 and 23-25:

Kikinis fails to teach the elements recited in claims 19-20 and 23-25 including

using a lookup table and computing the desired operating temperature. Atkinson

teaches that it is known to use a lookup table and computing the desired

operating temperature as claimed with figures 4, 6 and 7, at column 3, lines 13-

19 and at column 4, lines 37-52. It would have been obvious to one having

ordinary skill in the art at the time the invention was made to use a lookup table

and computing the desired operating temperature, as taught by Atkinson, in order

to quickly determine and change the desired operating temperature. One of

ordinary skill in the art would have been motivated to combine Kikinis and

Atkinson because of Kikinis suggestion of allowing a user to programmably set

the desired operating (threshold) temperature at column 5, lines 64-66. It would

have been obvious for one of ordinary skill in the art to combine Kikinis and

Atkinson because they are both directed to the problem of adjusting the

processor clock frequency based on a temperature reading of the processor and a desired threshold temperature.

9.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis M. Butler whose telephone number is 571-272-3663. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dennis M. Butler
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